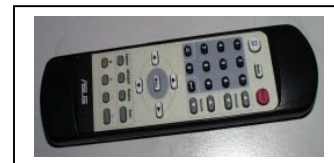


Activity #8



Title: Infrared Energy and the Remote Control-Student's Copy

Purpose: To observe the similarities and differences between the transmission and reception of visible and infrared light.

Materials: remote controllers, photocell detector (see Activity #7 for details on the construction of this unit), meter stick or metric tape measure, and camcorder

Procedure/Inquiry:

1. Using one brand of appliance remote controller, aim it at the solar cell of the photocell detector from a distance of less than one meter. Press the TV mode button on the controller and then the POWER button. Describe the results in the appropriate box of the attached data chart.
2. Determine and record the maximum distance at which the signal is detected by the photocell detector.
3. Repeat step #1 using the VCR mode button, again with the DVD mode button, and also with the Cable Box mode button, if so equipped. Report findings in the attached data chart. (Maximum operating distance does NOT need to be repeatedly measured for each mode.)
4. After completing the data chart and comparing your results, describe how you think it's possible for one brand of remote controller to be able to operate several different appliances (TV, VCR, DVD, etc.).
5. Offer an explanation as to why you think one brand of controller will NOT operate another brand of appliance.
6. Why do you think the controller only operates appliances up to a certain distance?
7. Look into the LED (light emitting diode) on the front of a remote controller while depressing the POWER button. Describe what you see.
8. Repeat step # 7, but this time view the LED through the viewfinder of a camcorder. Report your findings.
9. Offer an explanation as to the reason for any differences observed between Inquiries #7 and #8.
10. From your investigations in this activity, which of the DIFFERENT brands of remote controllers may have been manufactured by the same company (if any)? Explain the reasoning for your answer.
11. Do you remember having to get up from your seat to change the channel on the television or to pause the video in your VCR? How has the technological introduction of the infrared remote controller changed the quality of life for those using them?
12. One of the National Science Education Standards states "The effect of science on society is neither entirely beneficial nor entirely detrimental." Describe any detriments that the IR controller has introduced to society since its introduction.